REMARKS/ARGUMENTS

This Amendment is submitted in response to the Office Action dated March 5, 2007, and with the three month period for reply extending to June 5, 2007. Therefore, no extension of time fee is due. The status of the claims following entry of this Amendment is summarized below.

Claims 1, 12, 15, and 18 are currently amended.

Claims 19 and 24 are cancelled.

Claims 25 and 26 are new.

Claims 1-18, 20-23, and 25-26 remain pending.

Rejections Under 35 U.S.C. 103

Claims 1-23 were rejected under 35 U.S.C. 103(a) as being unpatentable over Peeters et al. ("Peeters" hereafter) (U.S. Patent No. 6,393,592) in view of Applicant's Admitted Prior Art (AAPA). These rejections are traversed.

The Office has admitted that Peeters does not teach a test controller as recited in claim 1. However, the Office has asserted that it would have been obvious to one of ordinary skill in the art at the time of the invention to have the NS (not set) and the NR (not reset) signals of Peeters generated by a test controller. The Office has further asserted that supply of the NS signal of Peeters to the set terminal of the flip-flop 210 of Peeters teaches connection of a first test data output of a test controller to a set input of an asynchronous flip-flop, as recited in claim 1. Additionally, the Office has asserted that supply of the NR signal of Peeters to the reset terminal of the flip-flop 210 of Peeters teaches connection of a second test data output of a test controller to a reset input of an asynchronous flip-flop, as recited in claim 1.

The Applicant submits that the mere teaching by Peeters that the NS and NR signals are supplied to set and reset terminals, respectively, of the flip-flop 210, in combination with the knowledge that scan tests can be controlled by a test controller, is not sufficient to render obvious under 35 U.S.C. 103 the features of claim 1 explicitly requiring: 1) that the "first test data output" of the test controller be connected to the set input of the asynchronous flip-flop, and 2) that "second test data output" of the test controller be connected to the reset input of the asynchronous flip-flop. The Office's broad assertion that supply of the NS and NR signals of Peeters by a test controller would have been obvious does not address the explicitly recited features of claim 1 with regard to connection of first and second test data outputs of the test controller to the set and reset inputs, respectively, of the asynchronous flip-flop.

As the Office is aware, for a claim to be rendered prima facie obvious under 35 U.S.C. 103, each and every feature of the claim must be taught or suggested by the combined prior art. The Applicant submits that the mere conclusory statements by the Office with regard to the NS and NR signals of Peeters being communicated from a test controller are not sufficient to render obvious the features of claim 1 with regard to connection of first and second test data outputs of a test controller to set and reset inputs, respectively, of an asynchronous flip-flop.

The above notwithstanding, the Applicant has amended claim 1 to further clarify that the test controller is configured to control the asynchronous flip-flop through the set input and the reset input during test mode operation of the boundary scan cell. The Applicant submits that Peeters explicitly teaches away from control of an asynchronous flip-flop through its set and reset inputs during a test mode of operation. The objective of Peeters' invention is to block transmission of signals to the set and reset inputs of an asynchronous flip-flop during its operation in a scan mode, i.e., test mode.

Specifically, Peeters [6:36-41] states that during scan mode, when SM is equal to a logical one, the OR gates 213 and 220 will block both an asynchronous set and an asynchronous reset. Because the NS and NR signals of Peeters can only be provided to the set and reset inputs, respectively, of the flip-flop 210 by way of the OR gates 220 and 213, respectively, assertion of the SM signal during the scan mode actually prevents any signal, including the NS and NR signals, from reaching the set and reset inputs of the flip-flop 210. Therefore, in contrast to the Office's assertions, Peeters actually teaches away from the capability of using the NS and NR signals to control the flip-flop 210 during its operation in scan mode when the SM signal is equal to a logical one. Per MPEP 2145 X.D.1., "A prior art reference that teaches away from the claimed invention is a significant factor to be considered in determining obviousness."

Modification of Peeters to enable communication of the NS and NR signals to the flip-flop 210 during scan mode would require removal of the OR gates 220 and 213. However, such modification of Peeters to remove the OR gates 220 and 213 would change the principle of operation of Peeters' invention and render Peeters' invention unsatisfactory for its intended purpose with regard to blocking the set and reset inputs of the flip-flop 210 during the scan mode of operation.

If the proposed modification would render the prior art invention being modified unsatisfactory for its intended purpose, then there is no suggestion of motivation to make the proposed modification. *In re Gordon*, 733, F.2d 900, 221 USPQ 1125 (Fed. Cir. 1984). Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so. *In re Kahn*, 441 F.3d 977, 986, 78 USPQ2d 1329, 1335 (Fed. Cir. 2006). Therefore, in view of the foregoing, the Applicant submits that there is no teaching, suggestion, or motivation to have modified the teachings of Peeters to arrive at

the apparatus of amended claim 1. Consequently, the Applicant submits that amended claim 1 is not rendered prima facie obvious under 35 U.S.C. 103, by the combination of Peeters and AAPA. Therefore, the Applicant requests that the Office withdraw the rejection of amended claim 1 under 35 U.S.C. 103.

Because a dependent claim incorporates each and every feature of its independent claim the dependent claim is patentable for at least the same reasons as its independent claim. Therefore, the Applicant submits that each of dependent claims 2-11 and 25-26, is patentable for at least the same reasons as amended claim 1. The Office is kindly requested to withdraw the rejections of dependent claims 2-11 and 25-26.

Claim 12 has been amended to recite that the test controller is configured to communicate with the set and reset inputs of the asynchronous flip-flop during test mode operation of the boundary scan cell without communicating through intervening multiplexing circuitry. The Office has rejected independent claim 12 using the same basis as applied to reject independent claim 1. Therefore, the Applicant's arguments with regard to amended claim 1 are equally applicable to amended claim 12. Consequently, the Applicant submits that amended claim 12 is not rendered prima facie obvious under 35 U.S.C. 103, by the combination of Peeters and AAPA. Therefore, the Applicant requests that the Office withdraw the rejection of amended claim 12 under 35 U.S.C. 103. Additionally, the Applicant submits that each of dependent claims 13-14, is patentable for at least the same reasons as amended claim 12. The Office is kindly requested to withdraw the rejections of dependent claims 13-14.

Claim 15 has been amended to recite an operation for connecting a first output port of a test controller to a set input port of an asynchronous flip-flop to supply a test data signal from the test controller to the set input port during test mode operation of the boundary scan cell. Claim 15 has also been amended to recite an operation for connecting

a second output port of the test controller to a reset input port of the asynchronous flip-flop to supply a test data signal from the test controller to the reset input port during test mode operation of the boundary scan cell.

The Office has rejected independent claim 15 using the same basis as applied to reject independent claim 1. Therefore, the Applicant's arguments with regard to amended claim 1 are equally applicable to amended claim 15. Consequently, the Applicant submits that amended claim 15 is not rendered prima facie obvious under 35 U.S.C. 103, by the combination of Peeters and AAPA. Therefore, the Applicant requests that the Office withdraw the rejection of amended claim 15 under 35 U.S.C. 103. Additionally, the Applicant submits that each of dependent claims 16-17, is patentable for at least the same reasons as amended claim 15. The Office is kindly requested to withdraw the rejections of dependent claims 16-17.

Claim 18 has been amended to recite that a high state of at least one of the first signal and the second signal causes the asynchronous flip-flop to operate in a boundary scan test mode. This current amendment of claim 18 represents a direct incorporation of previously pending dependent claim 19 into claim 18. Also, as recited in claim 18, the first signal and the second signal are communicated from a test controller to the asynchronous flip-flop in accordance with a boundary scan timing signal. Furthermore, claim 18 recites that the first signal is received at a set input of the asynchronous flip-flop, and the second signal is received at a reset input of the asynchronous flip-flop.

In contrast to amended claim 18, Peeters [6:37-41] teaches that the SM signal causes the flip-flop 210 to operate in scan mode. The Applicant submits that the SM signal of Peeters does not teach either a first signal or a second signal communicated from a test controller to the set and reset inputs, respectively, of an asynchronous flip-flop. Also, as previously discussed, the NS and NR signals of Peeters are blocked from

reaching the flip-flop 210 when the SM signal is asserted to cause the flip-flop 210 to operation in scan mode. Therefore, Peeters does not teach that either a first signal or a second signal, as communicated from a test controller to the set and reset inputs, respectively, of an asynchronous flip-flop, causes the asynchronous flip-flop to operate in a boundary scan test mode, as required by amended claim 18.

Again, for a claim to be rendered prima facie obvious under 35 U.S.C. 103, each and every feature of the claim must be taught or suggested by the combined prior art. As discussed above, the combination of Peeters and AAPA fails to teach each and every feature of amended claim 18. Therefore, amended claim 18 is not rendered prima facie obvious by the combination of Peeters and AAPA. The Office is kindly requested to withdraw the rejection of amended claim 18 under 35 U.S.C. 103. Additionally, the Applicant submits that each of dependent claims 20-23, is patentable for at least the same reasons as amended claim 18. The Office is kindly requested to withdraw the rejections of dependent claims 20-23.

The Applicant submits that all of the pending claims are in condition for allowance. Therefore, a Notice of Allowance is requested. If the Examiner has any questions concerning the present Amendment, the Examiner is requested to contact the undersigned at (408) 774-6914. If any additional fees are due in connection with filing this Amendment, the Commissioner is also authorized to charge Deposit Account No. 50-0805 (Order No. ADAPP267). A duplicate copy of the transmittal is enclosed for this purpose.

Respectfully submitted,
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